# What the deep impactor has told us

**Prepared and Translated By Cheng Hung Yousuf Ma, PhD, March 1st 2006.**
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**Ice Exists on Surface of Comet, But Most Lies Deeper**

By analyzing data and images taken prior to impact, Deep Impact scientists have detected water ice in three small areas on the surface on comet Tempel 1. This is the first time ice has been detected on the nucleus, or solid body, of a comet. The findings are published on February 2, 2006 in the online version of the journal Science.

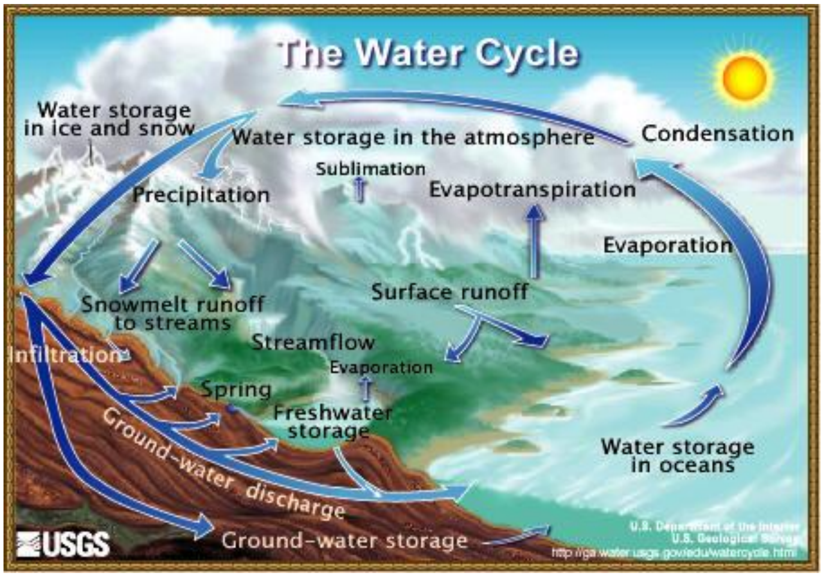
**Reference:** http://www.newsdesk.umd.edu/scitech/release.cfm?ArticleID=1213

**Volume of Earth's Water:**

Water is continually moving around, through, and above the Earth as water vapor, liquid water, and ice. In fact, water is continually changing its form. The Earth is pretty much a "closed system," like a terrarium. That means that the Earth neither, as a whole, gains nor loses much matter, including water. Although some matter, such as meteors from outer space, are captured by Earth, very little of Earth's substances escape into outer space. This is certainly true about water. This means that the same water that existed on Earth millions of years ago is still here. Thanks to the water cycle (view a graphic of the water cycle), the same water is continually being recycled all around the globe.

The Earth has approximately 1.3 billion cubic kilometers of water, meaning that a sphere with all of that water in it would have a diameter of 1354 kilometers (841 miles).

Based on the diameter of 1,354 km, the total volume of water on Earth is about 1.299725033 billion cubic kilometers.




**Reference:**
http://ga.water.usgs.gov/edu/earthwherewater.html
http://www.newton.dep.anl.gov/askasci/env99/env241.htm
http://hypertextbook.com/facts/2001/SyedQadri.shtml

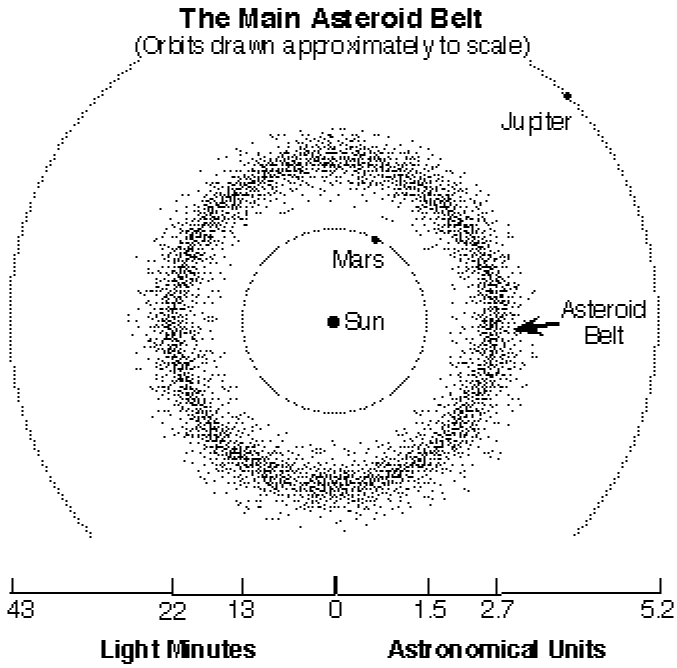
**Asteroid Introduction**

Asteroids are rocky and metallic objects that orbit the Sun but are too small to be considered planets. They are known as *minor planets*. Asteroids range in size from Ceres, which has a diameter of about 1000 km, down to the size of pebbles. Sixteen asteroids have a diameter of 240 km or greater. They have been found inside Earth's orbit to beyond Saturn's orbit. Most, however, are contained within a *main belt* that exists between the orbits of Mars and Jupiter. Some have orbits that cross Earth's path and some have even hit the Earth in times past.

Asteroids are material left over from the formation of the solar system. One theory suggests that they are the remains of a planet that was destroyed in a massive collision long ago. In fact, if the estimated total mass of all asteroids ware gathered into a single object, the object would be **less than 1,500 kilometers** (932 miles) across -- less than half the diameter of our Moon.

Of all the meteorites examined, 92.8 percent are composed of silicate (stone), and 5.7 percent are composed of iron and nickel; the rest are a mixture of the three materials. Stony meteorites are the hardest to identify since they look very much like terrestrial rocks.

The following picture depicts where and how asteroids are distributed in the Solar System.



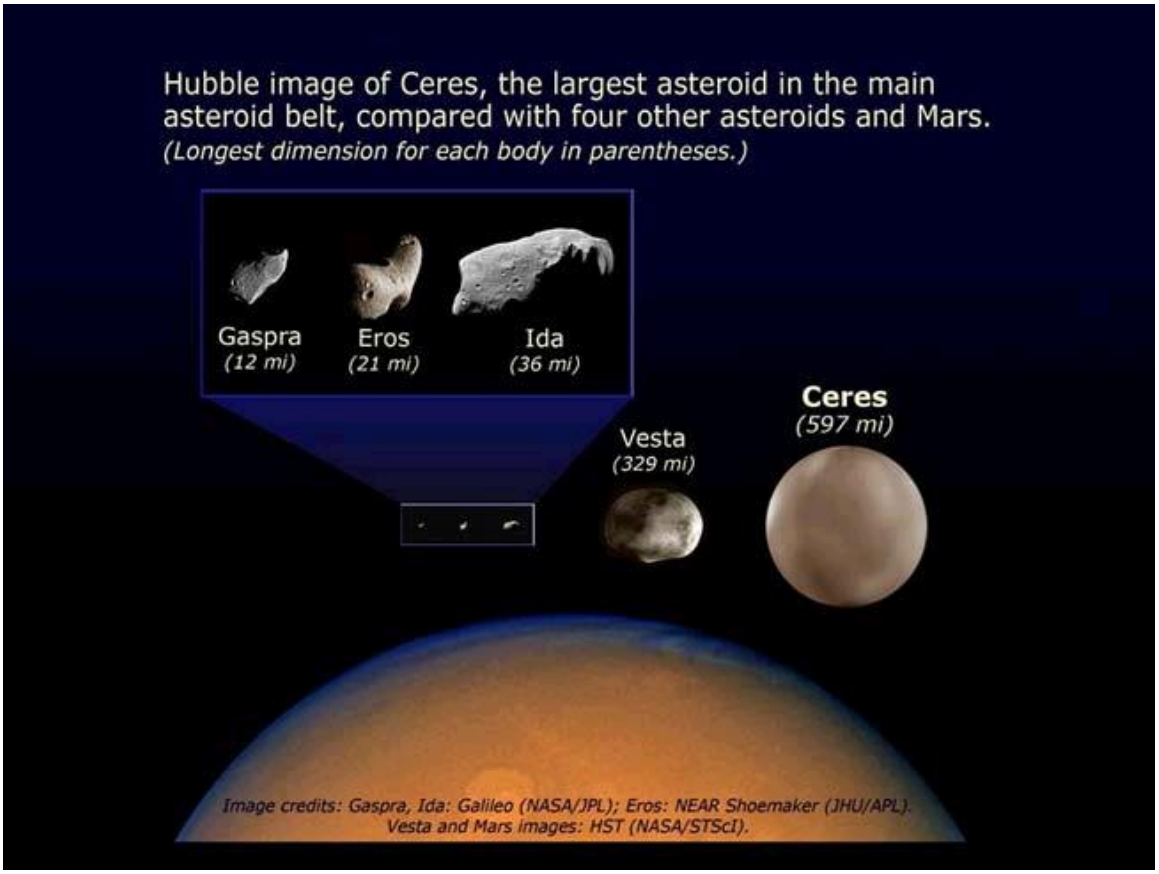

Based on the diameter of 1,500 km, the total volume of asteroids in our solar system is about 1.767133125 billion cubic kilometers.

**Reference:** http://www.solarviews.com/eng/asteroid.htm

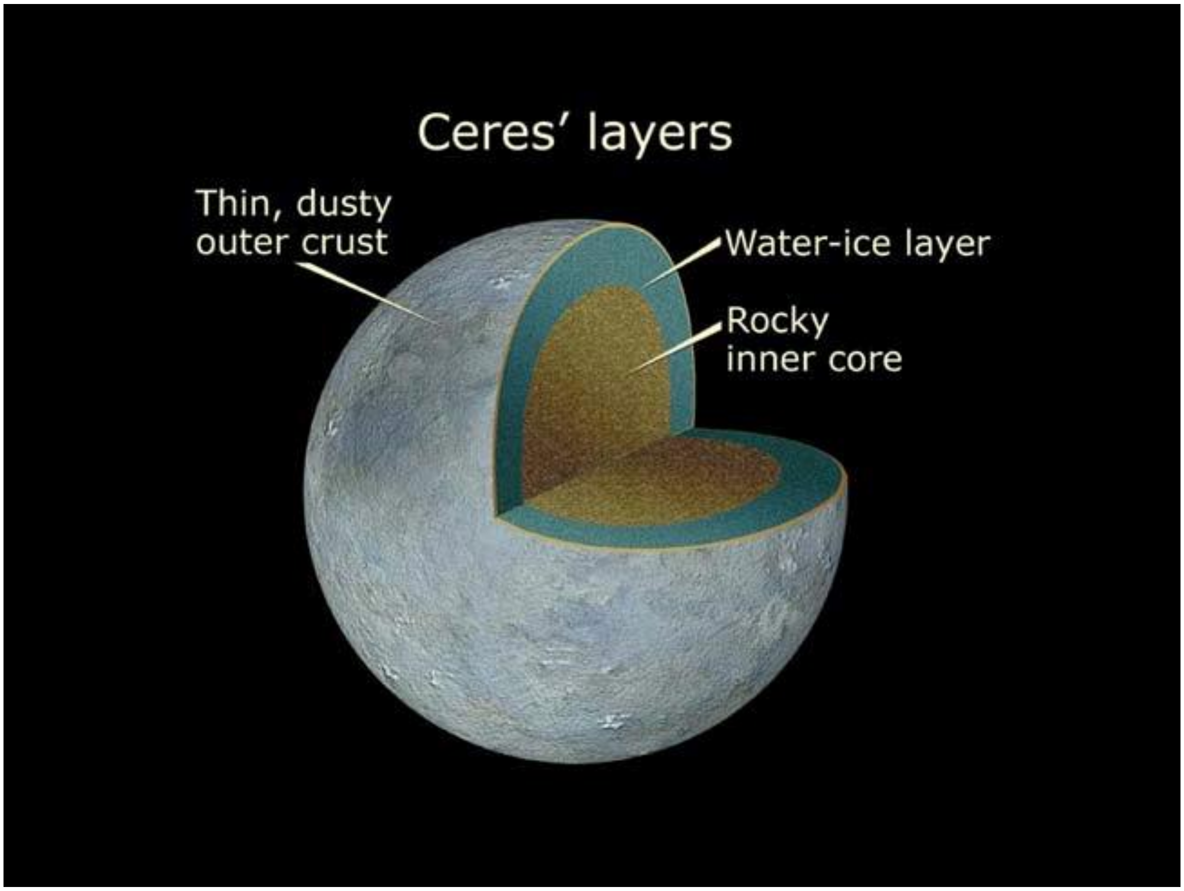
**Largest Asteroid Might Contain More Fresh Water than Earth**

The largest known asteroid could contain more fresh water than Earth and looks like our planet in other ways, according to a new study that further blurs the line between planets and large space rocks.

Ceres has long been considered one of the tens of thousands of asteroids that make up the asteroid belt between Mars and Jupiter. At 930 km (580 miles) in diameter – about the size of Texas – it's the largest asteroid (see picture) in the belt, accounting for about 25 percent of the belt's total mass.




Computer models now suggest Ceres has a differential interior (see picture) – dense material in the core and lighter stuff near the surface. Possible configurations include a mantle rich in water ice around a rocky core.




If this mantle is composed of at least 25 percent water, Ceres would have more fresh water than Earth, according to a statement released by the Space Telescope Science Institute, which operates Hubble for NASA and the European Space Agency.

“The most likely scenario from the knowledge we have on how other objects form, it probably has a rocky core and a mantle. That mantle is probably some watery, icy mix, with other dirt and constituents. That mantle could be as much as ¼ of the whole object," study coauthor Joel Parker of the Southwest Research Institute told *SPACE.com*. "Even though it's a small object compared to Earth, there could be a lot of water.”

On Earth, fresh water makes up only a thin layer just a few miles deep in some places, less in others. The water layer proposed for Ceres, while smaller in circumference, is many miles thicker.

The total volume of water on Earth is about 1.4 billion cubic kilometers, around 41 million of which is fresh water. If Ceres’ mantle accounts for 25 percent of the asteroid’s mass, that would translate to an upper limit of 200 million cubic kilometers of water, Parker said.

Based on the diameter of 930 km, the total volume of Ceres is about 0.421157303 billion cubic kilometers.

**Reference:** http://www.space.com/scienceastronomy/050907_ceres_planet.html

**What can we learn from the calculated volumes:**

Total volume of asteroids (based on 1,500 km) is 1.767133125 billion cubic kilometers.
Total volume of Ceres is 0.421157303 billion cubic kilometers.
Total volume of asteroids without Ceres is 1.345975822 billion cubic kilometers.

Remember the estimated diameter of the total asteroids volume is less than 1,500 km. If we assume a closer diameter at 1,490 km, then, we can have the total asteroids volume for 1.732025556 billion cubic kilometers.

Total volume of asteroids (based on 1,490 km) is 1.732025556 billion cubic kilometers.
Total volume of Ceres is 0.421157303 billion cubic kilometers.
Total volume of asteroids without Ceres is 1.310868253 billion cubic kilometers.

Total volume of water on Earth (based on 1,354 km) is 1.299725033 billion cubic kilometers. Or more accurately to say the total volume of water on Earth is in between 1.3 and 1.4 billion cubic kilometers. We have found that the volume of water on Earth is about the volume of all asteroids, except Ceres, in the solar system.

**Where the water on the earth came from?**

This is a very interesting question. One of the hypothetic thought is that Allah (SWT) has replaced about 71% of the Earth surface with the water from out space carried by Comets or Asteroids. This idea came from Mr. Kemal Burkay, a Turkish scientist. I have to honor his finding from Qur'an (2.74) many years ago before last year's (July 4, 2004) Deep Impact project.

**Surat Bagara, Ayah 74 (2.74)**

[74] Then, after that, your hearts were hardened and became as stones or even worse in hardness. And indeed, there are stones out of which rivers gush forth, and indeed, there are of them (stones), which split asunder so that water flows from them, and indeed, there are of them (stones), which fall down for fear of Allah. And Allah is not unaware of what you do.

**What is the conclusion?**

Based on Bukhara Turkish scientist Kemal Burkay's concept, Allah (SWT) had sent water to Earth from outer space through asteroids, like Ceres. Then, from the finding of the total volume of water on Earth is about the same volume of total asteroids (not include Ceres) in the solar system. Therefore, the flying asteroids in our Sun System were

Earth's materials and were the results of displacements of water on Earth after the impacts of the asteroids. They are Earth's debris. Allah (SWT) has left Ceres on the orbit let us to discover the meaning in the Ayah 2.74. The Ayah has revealed us something let us think deeply about His creation. All praise due to Him.

Regards
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